

CLAIMS

We claim:

1. A pump control and management system interfaced with a conventional information handling system and operationally coupled to a sump pump comprising:

a level sensing assembly positioned within the sump pit for detecting a level of water in the sump pit, and

a control interface program operationally interacting with the conventional information handling system, said control interface program being operationally coupled to the sump pump through the conventional information handling system, said control interface program being operationally coupled to said level sensing assembly through the conventional information handling system, said control interface program activating the sump pump when said level sensing assembly signals that water in the sump pit has reached a predetermined level.

2. The system of claim 1, wherein said level sensing assembly comprises a plurality of thermistors positioned in the sump pit, each one of said plurality of thermistors changing resistance when in contact with water whereby the level of water in the sump pit is determinable.

3. The system of claim 2, wherein said control interface program monitors a resistance value associated with each one of said plurality of thermistors, said control interface program generating a user alarm upon any one of said plurality of

thermistors having a resistance value outside of a predetermined range.

4. The system of claim 1, further comprising at least one local sensor for detecting a water level outside of the sump pit, said local sensor being operationally coupled to said control interface program through the conventional information handling system.

5. The system of claim 4, wherein said control interface program monitors a resistance value associated with each one of said at least one local sensor, said control interface program generating a user alarm upon any one of said at least one local sensor having a resistance value outside of a predetermined range.

6. The system of claim 1, further comprising:

a secondary level detection assembly for detecting water overflowing from the sump pit, said secondary level detection assembly being operationally coupled to said control interface program through the conventional information handling system; and

a secondary pump operationally coupled to said control interface program through the conventional information handling system, said secondary pump being activated when said secondary level detection assembly detects a fluid above a predetermined secondary level.

7. The system of claim 6, wherein said control interface program monitors a resistance value associated with said secondary level detection assembly, said control interface program generating a user alarm upon said secondary level detection assembly having a resistance value outside of a predetermined range.

8. The system of claim 1, further comprising a modem operationally interacting with said control interface program, said modem being couplable to a conventional telephone system, said modem being for dialing out on the conventional telephone system to relay an alarm condition from said control interface program to a remote location.

9. The system of claim 8, further comprising a backup battery system for providing electrical power to said control interface program through the conventional information handling system and said modem in the event of electrical failure whereby said alarm condition from said control interface program may be relayed during power failure.

10. The system of claim 8, wherein said modem relays at least one of a plurality of predetermined voice messages associated with said alarm condition whereby a person listening at the remote location can determine the alarm condition.

11. The system of claim 1, further comprises at least two power line modems for routing data over existing in-situ power lines thereby decreasing a need for custom wiring of the system for installation.

12. The system of claim 1, further comprising a flood detection assembly operationally coupled to said control interface program through the conventional information handling system, said flood detection assembly detecting rising flood waters and signaling said control interface program, said flood detection assembly detecting receding flood water and signaling said control interface program.

13. The system of claim 12, wherein said control interface program monitors a resistance value associated with said flood detection assembly, said control interface program generating a user alarm upon said flood detection assembly having a resistance value outside of a predetermined range.

14. The system of claim 1, wherein said control interface program generates a pop-up window viewable on the conventional information handling system for providing a visual indication of an alarm condition, said control interface program operationally interacting with a speaker of the conventional information handling system for providing an aural indication of an alarm condition.

15. The system of claim 1, wherein said at least one local sensor further comprises:

- a water heater leak sensor operationally coupled to said control interface program through the conventional information handling system for sensing a leak from a conventional water heater;

- a laundry leak sensor operationally coupled to said control interface program for sensing a leak from a conventional washing machine;

a dishwasher leak sensor operationally coupled to said control interface program through the conventional information handling system for sensing a leak from a conventional dishwasher;

a sink leak detector operationally coupled to said control interface program through the conventional information handling system for sensing a leak from a conventional sink;

a bathroom leak detector operationally coupled to said control interface program through the conventional information handling system for sensing a water leak in a bathroom;

a pool sensor operationally coupled to said control interface program through the conventional information handling system for detecting a high water level in pool;

a septic system sensor operationally coupled to said control interface program through the conventional information handling system for detecting a high level in a septic system;

said control interface program generating an alarm uniquely associated with each one of said water heater leak sensor, said laundry leak sensor, said a dishwasher leak sensor, said sink leak detector, said bathroom leak detector, said pool sensor, and said septic system sensor, said control interface program activating a solenoid through the conventional information handling system to shut off a water supply when said alarm is generated.

16. The system of claim 1 further comprising a manual pump actuation assembly for providing a user with a means of actuating the sump pump on demand, said manual pump actuation assembly being operationally coupled to said control interface program.

17. The system of claim 1, further comprising a video camera operationally coupled to said control assembly through the conventional information handling system, said video camera monitoring an area associated with at least one of said sensors, said video camera providing at least one image to be relayed through said modem to a remote location upon generation of an alarm associated with one of said sensors.

18. The system of claim 17, further comprising at least one motion sensor operationally coupled to said video camera and said control interface program through the conventional information handling system, said motion sensor generating an alarm condition when motion is detected.

19. The system of claim 18, wherein said system generates an email message to be transmitted through said modem to a remote user when an alarm condition is detected by said control interface program.

20. The system of claim 19, wherein said email message further comprises at least one image captured by said video camera concurrent with said alarm condition.

21. The system of claim 18, wherein said system generates a facsimile message through said modem for sending a message to a remote facsimile machine when an alarm condition is detected by said control interface program.

22. The system of claim 17, wherein a position of said at least one video camera being adjustable by said control interface program, said video camera tilting to change an area of monitoring when commanded by said control interface program, said video camera being panning when commanded by said control interface program to change an area of monitoring.

23. The system of claim 22, wherein said control interface program commanding said at least one video camera to tilt upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to pan upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to zoom upon receiving an instruction from a remote user via said modem whereby positioning of said at least one video camera is controllable by a remote user.

24. The system of claim 1, further comprising a motion detection means for providing a supplemental signal to said control interface program, said supplemental signal being used to alert a user.

25. The system of claim 24, wherein said motion detection means further comprises:

at least one video camera being adjustable by said control interface program, said video camera tilting to change an area of monitoring when commanded by said control interface program, said video camera panning when commanded by said control interface program to change an area of monitoring, said video

camera zooming when commended by said control interface program;

a video motion detector operationally coupled to said at least one video camera to determine an occurrence of motion based upon a video image from said at least one video camera.

26. The system of claim 25, wherein said motion detection means further comprises a video motion filter, said filter being capable of selecting a sub-area of said video image for determining the occurrence of motion, said filter being capable of selecting a threshold of motion necessary to generate said supplemental signal.

27. The system of claim 1, further comprising at least one audio transducer for selectively capturing ambient audio in an area to be monitored, said at least one audio transducer being operationally coupled to said control interface program for providing a representation of the ambient audio to a user.

28. The system of claim 1, wherein said control interface program being remotely accessible by a remote user whereby said system may be controlled by the remote user.

29. The system of claim 28, wherein said control interface program being remotely accessible by the remote user through a dial-up connection operationally interacting with said modem, whereby the remote user may dial a telephone number associated with said modem and interact with said control interface program.

30. The system of claim 29, further comprising a password system for inhibiting unauthorized access to said control interface program through said dial-up connection.

31. The system of claim 1, wherein said control interface program having a physical implementation whereby a hardware connection facilitates operational interaction between said control interface program and the conventional information handling system.

32. The system of claim 1, further comprising:

said level sensing assembly comprises a plurality of thermistors positioned in the sump pit, each one of said plurality of thermistors changing resistance when in contact with water whereby the level of water in the sump pit is determinable;

at least one local sensor for detecting a water level outside of the sump pit, said local sensor being operationally coupled to said control interface program through the conventional information handling system;

a secondary level detection assembly for detecting water overflowing from the sump pit, said secondary level detection assembly being operationally coupled to said control interface program through the conventional information handling system;

a secondary pump operationally coupled to said control interface program through the conventional information handling system, said secondary pump being activated when said secondary level detection assembly detects a fluid above a predetermined secondary level;

a modem operationally interacting with said control interface program, said modem being couplable to a conventional telephone

system, said modem being for dialing out on the conventional telephone system to relay an alarm condition from said control interface program to a remote location;

a flood detection assembly operationally coupled to said control interface program through the conventional information handling system, said flood detection assembly detecting rising flood waters and signaling said control interface program, said flood detection assembly detecting receding flood water and signaling said control interface program; and

wherein said control interface program generates a pop-up window viewable on the conventional information handling system for providing a visual indication of an alarm condition, said control interface program operationally interacting with a speaker of the conventional information handling system for providing an aural indication of an alarm condition.

33. The system of claim 32, further comprising:

wherein said control interface program monitors a resistance value associated with each one of said level sensing assembly, said at least one local sensor, said secondary level detection assembly, said sewage level detection assembly, and said flood detection assembly;

said control interface program providing a user alarm upon any one of said plurality of said level sensing assembly, said at least one local sensor, said secondary level detection assembly, said sewage level detection assembly, and said flood detection assembly having a resistance value outside of a predetermined range.

34. The system of claim 32, further comprising:

a backup battery system for providing electrical power to said control interface program through the conventional information handling system and said modem in the event of electrical failure whereby said alarm condition from said control interface program may be relayed during power failure;

at least two power line modems for routing data over existing in-situ power lines thereby decreasing a need for custom wiring of the system for installation;

a manual pump actuation assembly for providing a user with a means of actuating the sump pump on demand, said manual pump actuation assembly being operationally coupled to said control interface program; and

wherein said control interface program having a physical implementation whereby a hardware connection facilitates operational interaction between said control interface program and the conventional information handling system.

35. The system of claim 32, wherein said control interface program being operationally coupled to an internet whereby said control interface program is accessible through an internet protocol (IP) address, whereby the remote user may access an internet page and interact with said control interface program.

36. The system of claim 35, further comprising a password system for inhibiting unauthorized access to said control interface program through said internet protocol (IP) address.

37. The system of claim 32, further comprising:

at least one video camera operationally coupled to said control interface program, said video camera monitoring an area associated with at least one of said sensors, said video camera providing at least one image to be relayed through said modem to a remote location upon generation of an alarm associated with one of said sensors;

wherein a position of said at least one video camera being adjustable by said control interface program, said video camera tilting to change an area of monitoring when commanded by said control interface program, said video camera being panning when commanded by said control interface program to change an area of monitoring;

said control interface program commanding said at least one video camera to tilt upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to pan upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to zoom upon receiving an instruction from a remote user via said modem whereby positioning of said at least one video camera is controllable by a remote user;

a video motion detector operationally coupled to said at least one video camera to determine an occurrence of motion based upon a video image from said at least one video camera; and

a video motion filter being capable of selecting a sub-area of said video image for determining the occurrence of motion, said filter being capable of selecting a threshold of motion necessary to generate a supplemental signal.

38. The system of claim 32, further comprising at least one audio transducer for selectively capturing ambient audio in an area to be monitored, said at least one audio transducer being operationally coupled to said control interface program for providing a representation of the ambient audio to a user.

39. The system of claim 32, further comprising:

said control interface program being remotely accessible by the remote user through a dial-up connection operationally interacting with said modem, whereby the remote user may dial a telephone number associated with said modem and interact with said control interface program; and

a password system for inhibiting unauthorized access to said control interface program through said dial-up connection.

40. The system of claim 32, further comprising:

wherein said control interface program being remotely accessible by a remote user through a remote connection means whereby said system may be controlled by the remote user;

said remote connection means being selected from the group of remote connection means consisting of a dial-up connection operationally interacting with said modem, and an internet protocol (IP) address; and

a password system for inhibiting unauthorized access to said control interface program through said remote connection means.

41. The system of claim 32, further comprising:

at least one video camera operationally coupled to said control interface program, said video camera monitoring an area associated with at least one of said sensors, said video camera providing at least one image to be relayed through said modem to a remote location upon generation of an alarm associated with one of said sensors;

wherein a position of said at least one video camera being adjustable by said control interface program, said video camera tilting to change an area of monitoring when commanded by said control interface program, said video camera being panning when commanded by said control interface program to change an area of monitoring;

said control interface program commanding said at least one video camera to tilt upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to pan upon receiving an instruction from a remote user via said modem and said control interface program commanding said at least one video camera to zoom upon receiving an instruction from a remote user via said modem whereby positioning of said at least one video camera is controllable by a remote user;

a video motion detector operationally coupled to said at least one video camera to determine an occurrence of motion based upon a video image from said at least one video camera;

a video motion filter being capable of selecting a sub-area of said video image for determining the occurrence of motion, said filter being capable of selecting a threshold of motion necessary to generate a supplemental signal;

at least one audio transducer for selectively capturing ambient audio in an area to be monitored, said at least one audio transducer being operationally coupled to said control interface program for providing a representation of the ambient audio to a user;

wherein said control interface program being remotely accessible by a remote user through a remote connection means whereby said system may be controlled by the remote user;

said remote connection means being selected from the group of remote connection means consisting of a dial-up connection operationally interacting with said modem, and an internet internet protocol (IP) address; and

a password system for inhibiting unauthorized access to said control interface program through said remote connection means.

42. The system of claim 32, further comprising an ambient air temperature sensor operationally coupled to said control interface program, said ambient air temperature sensor providing a representation of an ambient air temperature adjacent to a predetermined area.

43. The system of claim 42, wherein said control interface program providing a user alarm if said representation of ambient air temperature falls below a threshold value.

44. The system of claim 1, further comprising an ambient air temperature sensor operationally coupled to said control interface program, said ambient air temperature sensor providing a representation of an ambient air temperature adjacent to a predetermined area, wherein said control interface program providing a user alarm if said representation of ambient air temperature indicates a near freezing condition.